

IN THE CLAIMS:

1 1. (CURRENTLY AMENDED) A method for allowing a router to efficiently determine
2 a ~~capability and~~ time-to-live (TTL) configuration of a peer router in a computer network,
3 the method comprising the steps of:

4 automatically determining which ~~capability~~ TTL mode of operation the peer
5 router supports by sending an initial Border Gateway Protocol (BGP) message from the
6 router to the peer router, the initial BGP message including a first predetermined value of
7 ~~the capability~~ a TTL parameter;

8 if the router receives a positive acknowledgement of the initial BGP message
9 from the peer router, determining that the peer router supports exchanges of messages
10 using a new ~~capability~~ TTL mode of operation; and

11 if the router receives a negative acknowledgement of the initial BGP message
12 from the peer router, deciding that the peer router does not support the new ~~capability~~
13 TTL mode of operation, and switching to an old ~~capability~~ TTL mode of operation by
14 resending the initial BGP message with a second predetermined value of the ~~capability~~
15 TTL parameter.

1 2. (CURRENTLY AMENDED) The method of Claim 1 wherein the step of deciding
2 comprises the step of, if the router does not receive a response at all within a predeter-
3 mined time, deciding that the peer router does not support the new ~~capability~~ TTL mode
4 of operation.

1 3. (CANCELLED)

1 4. (CURRENTLY AMENDED) The method of Claim 31 wherein the new ~~capability~~
2 TTL mode of operation is defined by BGP TTL Security Hack (BTSH).

1 5. (CURRENTLY AMENDED) The method of Claim 4 wherein the first predetermined
2 value of the TTL parameter ~~capability~~ is 255.

1 6. (CURRENTLY AMENDED) The method of Claim ~~1~~ 3 wherein the second prede-
2 termined value of the TTL parameter is 1.

1 7. (CURRENTLY AMENDED) The method of Claim 1 further comprising the steps of,
2 in response to the router receiving a negative acknowledgement of the initial BGP mes-
3 sage from the peer router:

4 upgrading the peer router to the new ~~capability~~ TTL mode of operation;

5 rebooting the peer router, thereby destroying an existing session between the
6 routers;

7 establishing a new session by sending messages with the first predetermined value
8 of the ~~capability~~ TTL parameter; and

9 communicating between the routers using messages with the first predetermined
10 value of the TTL parameter ~~capability~~.

1 8. (CURRENTLY AMENDED) A system adapted to allow a router to efficiently de-
2 termine a ~~capability and~~ time-to-live (TTL) configuration of a peer router in a computer
3 network, the system comprising:

4 a routing protocol process executing in the peer router and adapted to receive an
5 initial routing protocol message sent by an initiating routing protocol process executing in
6 the router, the initial routing protocol message including a predetermined value of the ~~ca-~~
7 ~~capability~~ a TTL parrameter, the routing protocol process returning one of (i) a positive ac-
8 knowledgement of the initial routing protocol message to the router if the peer router
9 supports exchanges of messages using a new ~~capability~~ TTL mode of operation and (ii) a

10 negative acknowledgement of the initial routing protocol message if the peer router does
11 not support the new ~~capability~~ TTL mode of operation.

1 9. (CURRENTLY AMENDED) The system of Claim 8 wherein the routing protocol
2 process executing in the peer router ~~is the~~ implements Border Gateway Protocol version
3 4 (BGP) routing protocol ~~and wherein the capability is a time-to-live (TTL) parameter.~~

1 10. (CURRENTLY AMENDED) The system of Claim 9 wherein the new ~~capability~~
2 TTL mode of operation is defined by BGP TTL Security Hack (BTSH).

1 11. (CURRENTLY AMENDED) The system of Claim 10 wherein the predetermined
2 value of the TTL parameter ~~capability~~ is 255.

1 12. (CURRENTLY AMENDED) Apparatus adapted to allow a router to efficiently de-
2 termine a ~~capability and time-to-live (TTL)~~ configuration of a peer router in a computer
3 network, the apparatus comprising:

4 means for sending an initial Border Gateway Protocol (BGP) message from the
5 router to the peer router, the initial BGP message including a first predetermined value of
6 ~~the capability~~ a TTL parameter;

7 means for determining that the peer router supports exchanges of messages using
8 a new ~~capability~~ TTL mode of operation, if the router receives a positive acknowledge-
9 ment of the initial BGP message from the peer router;

10 means for deciding that the peer router does not support the new ~~capability~~ TTL
11 mode of operation, if the router receives a negative acknowledgement of the initial BGP
12 message from the peer router, and for switching to an old ~~capability~~ TTL mode of opera-
13 tion by resending the initial BGP message with a second predetermined value of the ~~ea-~~
14 ~~pability~~ TTL parameter.

1 13. (CURRENTLY AMENDED) The apparatus of Claim 12 wherein the means for de-
2 ciding comprises;
3 ~~_____ if the router does not receive a response at all within a predetermined time,~~ means
4 for deciding that the peer router does not support the new ~~capability-TTL~~ mode of opera-
5 tion, if the router does not receive a response at all within a predetermined time.

1 14. (CURRENTLY AMENDED) The apparatus of Claim 12 wherein ~~the initial message~~
2 ~~is Border Gateway Protocol (BGP) routing protocol message, the capability is a time to-~~
3 ~~live (TTL) parameter and the new capability-TTL mode of operation is defined by BGP~~
4 ~~TTL Security Hack (BTSH).~~

1 15. (CURRENTLY AMENDED) The apparatus of Claim 12 further comprising, ~~in re-~~
2 ~~sponse to the router receiving a negative acknowledgement of the initial message from~~
3 ~~the peer router:~~
4 means for upgrading the peer router to the new ~~capability-TTL~~ mode of operation;
5 means for destroying an existing session between the routers;
6 means for sending messages with the first predetermined value of the ~~capability~~
7 TTL parameter; and
8 means for communicating between the routers using messages with the first pre-
9 determined value of the ~~capability-TTL~~ parameter.

1 16. (CURRENTLY AMENDED) A computer readable medium containing executable
2 program instructions for allowing a router to efficiently determine a time-to-live (TTL)
3 ~~capability and~~ configuration of a peer router in a computer network, the executable pro-
4 gram instructions comprising program instructions for:

5 automatically determining which ~~capability-TTL~~ mode of operation the peer
6 router supports by sending an initial Border Gateway Protocol (BGP) message from the

7 router to the peer router, the initial BGP message including a first predetermined value of
8 ~~the capability~~ a TTL parameter;

9 if the router receives a positive acknowledgement of the initial BGP message
10 from the peer router, determining that the peer router supports exchanges of messages
11 using a new ~~capability~~ TTL mode of operation;

12 if the router receives a negative acknowledgement of the initial BGP message
13 from the peer router, deciding that the peer router does not support the new ~~capability~~
14 TTL mode of operation, and switching to an old ~~capability~~ TTL mode of operation by
15 resending the initial BGP message with a second predetermined value of the ~~capability~~
16 TTL parameter.

1 17. (CURRENTLY AMENDED) The computer readable medium of Claim 16 wherein
2 the program instruction for deciding comprises one or more program instructions for, if
3 the router does not receive a response at all within a predetermined time, deciding that the
4 peer router does not support the new ~~capability~~ TTL mode of operation.

1 18. (CANCELLED)

1 19. (CURRENTLY AMENDED) The computer readable medium of Claim ~~18~~ 16
2 wherein the new ~~capability~~ TTL mode of operation is defined by BGP TTL Security
3 Hack (BTSH).

1 20. (CURRENTLY AMENDED) The computer readable medium of Claim 16 further
2 comprising program instructions for, in response to the router receiving a negative ac-
3 knowledgement of the initial BGP message from the peer router:

4 upgrading the peer router to the new ~~capability~~ TTL mode of operation;

5 destroying an existing session between the routers;

6 | sending messages with the first predetermined value of the ~~capability~~ TTL param-
7 | ter; and

8 | communicating between the routers using messages with the first predetermined
9 | value of the ~~capability~~ TTL paramter.

1 | 21. (CURRENTLY AMENDED) A system adapted to allow a router to efficiently de-
2 | termine a ~~capability and time-to-live (TTL)~~ configuration of a peer router in a computer
3 | network, the system comprising:

4 | an initiating routing protocol process executing in the router and adapted to send
5 | an initial routing protocol message to a routing protocol process executing in the peer
6 | router, the initial routing protocol message including a predetermined value of the ~~capa-~~
7 | ~~bility a TTL parameter~~, the initiating routing protocol process receiving one of (i) a posi-
8 | tive acknowledgement of the initial routing protocol message if the peer router supports
9 | exchanges of messages using a new ~~capability-TTL~~ mode of operation and (ii) a negative
10 | acknowledgement of the initial routing protocol message if the peer router does not sup-
11 | port the new ~~capability-TTL~~ mode of operation.

1 | 22. (CURRENTLY AMENDED) The system of Claim 21 wherein the initiating routing
2 | protocol process executing in the router ~~is the~~ implements Border Gateway Protocol ver-
3 | sion 4 (BGP) routing protocol ~~and wherein the capability is a time-to-live (TTL) parame-~~
4 | ~~ter~~.

1 | 23. (CURRENTLY AMENDED) The system of Claim ~~22~~ 21 wherein the new TTL ea-
2 | ~~capability~~ mode of operation is defined by BGP TTL Security Hack (BTSH).

1 | 24. (CURRENTLY AMENDED) The system of Claim 23 wherein the predetermined
2 | value of the TTL parameter ~~capability~~ is 255.

1 25. (CURRENTLY AMENDED) A method comprising:
2 sending an initial message to a peer router before a session is established with the
3 peer router, the initial message including a first predetermined value of a ~~capability-time-~~
4 to-live (TTL) parameter in a field that is outside of a routing protocol that makes use of
5 ~~the-capability TTL parameter~~;
6 if a positive acknowledgement of the initial message is received from the peer
7 router, determining that the peer router supports exchanges of messages using a new ~~ea-~~
8 pability-TTL mode of operation;
9 if a negative acknowledgement of the initial message is received from the peer
10 router, deciding that the peer router does not support the new ~~ea-~~pability-TTL mode of op-
11 eration and switching to an old ~~ea-~~pability-TTL mode of operation by resending the initial
12 message with a second predetermined value of the ~~ea-~~pability TTL parameter.

1 26. (CURRENTLY AMENDED) The method of Claim 25 wherein deciding further
2 comprises, if a response is not received within a predetermined time, deciding that the
3 peer router does not support the new ~~ea-~~pability-TTL mode of operation.

1 27. (CURRENTLY AMENDED) The method of Claim 25 wherein the initial message is
2 a Border Gateway Protocol (BGP) routing protocol message ~~and wherein the capability is~~
3 ~~a time-to-live (TTL) parameter~~.

1 28. (CURRENTLY AMENDED) The method of Claim ~~27~~ 25 wherein the new TTL
2 mode of operation is a BGP TTL Security Hack (BTSH).

1 29. (CURRENTLY AMENDED) The method of Claim 25 further comprising, in re-
2 sponse to receiving a negative acknowledgement of the initial message from the peer
3 router:
4 upgrading the peer router to the new ~~ea-~~pability-TTL mode of operation;

5 rebooting the peer router, thereby destroying an existing session between the
6 routers;
7 establishing a new session by sending messages with the first predetermined value
8 of the ~~capability~~ TTL parameter; and
9 communicating using messages with the first predetermined value of the ~~capabil-~~
10 ~~ity~~ TTL parameter.

1 30. (CURRENTLY AMENDED) An apparatus comprising:

2 a processor configured to execute an initiating routing protocol process, the initi-
3 ating routing protocol process configured to send an initial routing protocol message to a
4 routing protocol process of a peer router before a session is established with the peer
5 router, the initial routing protocol message including a predetermined value of a time-to-
6 live (TTL) parameter ~~capability~~ in a field that is outside of a routing protocol that makes
7 use of the ~~TTL parameter~~ capability, and wherein

8 the initiating routing protocol process is further configured to receive one of (i) a
9 positive acknowledgement of the initial routing protocol message if the peer router sup-
10 ports exchanges of messages using a new ~~capability~~ TTL mode of operation and (ii) a
11 negative acknowledgement of the initial routing protocol message if the peer router does
12 not support the new ~~capability~~ TTL mode of operation, and in response to a negative ac-
13 knowledge of the initial routing protocol message, switch to an old ~~capability~~ TTL
14 mode of operation and resend the initial message with another predetermined value of the
15 ~~capability~~ TTL parameter.

1 31. (CURRENTLY AMENDED) The apparatus of Claim 30 wherein the initiating rout-
2 ing protocol process is further configured to, if a response is not received within a prede-
3 termined time, decide that the peer router does not support the new ~~capability~~ TTL mode
4 of operation.

1 32. (CURRENTLY AMENDED) The apparatus of Claim 30 wherein the initiating rout-
2 ing protocol process is a Border Gateway Protocol version 4 (BGP) routing protocol
3 | process and wherein the capability is a time-to-live (TTL) parameter.

1 | 33. (CURRENTLY AMENDED) The apparatus of Claim 32 wherein the new capability
2 | TTL mode of operation is defined by BGP TTL Security Hack (BTSH).